

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A method for three-dimensionally, optically measuring a measuring object by comparison to a reference object, comprising the steps of:

acquiring image data of the measuring object;

comparing the image data of the measuring object to image data of the reference object;

assessing, one of directly and indirectly, the measuring object with regard to deviations from the reference object;

rotating ~~one of~~ at least one of the measuring object and the reference object and a holographic recording of ~~at least one of the measuring object and the reference object~~ relative to one another about at least one axis, the acquiring and the comparing steps being performed at various, relative rotational positions; and

evaluating regarding a maximum agreement of the measuring object with the reference object in accordance with the different comparisons, the deviation being assessed in the assessing step in a rotational position in accordance with the maximum agreement.

Claim 2: (Canceled).

3. (Original) The method according to claim 1, wherein the assessing step is performed during a production process.

4. (Original) The method according to claim 1, further comprising the step of storing data that three-dimensionally represent the reference object from a start in an evaluation unit, the comparing and assessing steps being performed in the evaluation unit.

5. (Original) The method according to claim 1, further comprising the step of recording image data of at least one of the measuring object and the reference object by a camera.

6. (Original) The method according to claim 1, wherein the assessing step includes the substep of directly assessing the deviations of the measuring object from the reference object following an interferometric superimposition of the measuring object and the reference object by comparing an obtained interference pattern to a reference interference pattern.

7. (Currently Amended) The method according to claim 6, further comprising the steps of:

arranging one of the reference object and ~~the~~ a holographic recording of the reference object in a reference arm of an interferometer;

arranging one of the measuring object and ~~the~~ a holographic recording of the measuring object in an object arm of the interferometer;

superimposing a reference light wave from the one of the reference object and the holographic recording of the reference object and an object light wave from the one of the measuring object and the holographic recording of the measuring object at a beam splitter; and

recording an interference pattern obtained by a camera.

8. (Currently Amended) The method according to claim 6, further comprising the steps of:

illuminating the measuring object and a light-deflecting element;

directing light waves from the measuring object and the light-deflecting element at a hologram of the reference object while ~~the~~ a hologram of the reference object is rotated; and

recording light superimposed on the hologram of the reference object by a camera.

9. (Original) The method according to claim 7, further comprising the step of obtaining a holographic recording of at least one of the reference object and the

measuring object by a device configured to generate a beam path of the interferometer.

10. (Original) The method according to claim 1, further comprising the assessing step includes the substep of assessing on the basis of a representation of prepared image data generated by an evaluation unit one of visually at a display device and automatically in the evaluation unit on the basis of one of predefined and predefinable criteria.

11. (New) A method for three-dimensionally, optically measuring a measuring object by comparison to a reference object, comprising the steps of:

acquiring image data of the measuring object;

comparing the image data of the measuring object to image data of the reference object;

assessing, one of directly and indirectly, the measuring object with regard to deviations from the reference object;

rotating a holographic recording of at least one of the measuring object and the reference object relative to one another about at least one axis, the acquiring and the comparing steps being performed at various, relative rotational positions; and

evaluating regarding a maximum agreement of the measuring object with the reference object in accordance with the different comparisons, the deviation being assessed in the assessing step in a rotational position in accordance with the maximum agreement.

12. (New) The method according to claim 11, further comprising the step of holographically recording the measuring object during a production process.

13. (New) The method according to claim 11, wherein the assessing step is performed during a production process.

14. (New) The method according to claim 11, further comprising the step of storing data that three-dimensionally represent the reference object from a start in

an evaluation unit, the comparing and assessing steps being performed in the evaluation unit.

15. (New) The method according to claim 11, further comprising the step of recording image data of at least one of the measuring object and the reference object by a camera.

16. (New) The method according to claim 11, wherein the assessing step includes the substep of directly assessing the deviations of the measuring object from the reference object following an interferometric superimposition of the measuring object and the reference object by comparing an obtained interference pattern to a reference interference pattern.

17. (New) The method according to claim 16, further comprising the steps of:
arranging one of the reference object and the holographic recording of the reference object in a reference arm of an interferometer;
arranging one of the measuring object and the holographic recording of the measuring object in an object arm of the interferometer;
superimposing a reference light wave from the one of the reference object and the holographic recording of the reference object and an object light wave from the one of the measuring object and the holographic recording of the measuring object at a beam splitter; and
recording an interference pattern obtained by a camera.

18. (New) The method according to claim 16, further comprising the steps of:
illuminating the measuring object and a light-deflecting element;
directing light waves from the measuring object and the light-deflecting element at a hologram of the reference object while the hologram of the reference object is rotated; and
recording light superimposed on the hologram of the reference object by a camera.

19. (New) The method according to claim 17, further comprising the step of obtaining a holographic recording of at least one of the reference object and the

measuring object by a device configured to generate a beam path of the interferometer.

20. (New) The method according to claim 11, further comprising the assessing step includes the substep of assessing on the basis of a representation of prepared image data generated by an evaluation unit one of visually at a display device and automatically in the evaluation unit on the basis of one of predefined and predefinable criteria.

21. (New) The method according to claim 8, further comprising the step of obtaining a holographic recording of at least one of the reference object and the measuring object by a device configured to generate a beam path of the interferometer.